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75S-1 Receiver

ADDENDUM TO INSTRUCTION BOOK 520-5795-00

FOR

75S-1 RECEIVER, 9th EDITION

1. Page 15. Near bottom of right column:
   Change value of C302 to 1000 uuf.
   Change part number of C302 to 912-1737-00.

2. Page 16. Change description of C306 to read: CAPACITOR, FIXED, CERAMIC: 0.02 uf, +60%, -40%, 250 vdcw.
   Change part number of C306 to 913-2097-00.

3. Page 16. In symbol column after C306, add C309, C310.

4. Page 16. Change value of C308 to: 5.0 uuf min to 25.0 uuf max.

5. Page 17/18. Figure 7-1:
   Two 0.02-uf capacitors in parallel are connected from junction of R302 and T301 to ground. One is marked C308; change this symbol to C310.

16 April, 1962

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instruction book

75S-1
Receiver

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SECTION I
INSTALLATION

1.1 UNPACKING.

Carefully lift the receiver out of packing material. Examine for visible damage. If receiver has been damaged in shipment, save box and packing material and notify the transportation company. Fill out and mail the equipment registration card. Check that all tubes and crystals are properly seated in sockets. Check tuning controls and switches for freedom of action.

1.2 MOUNTING AND CABLING.

Figure 1-1 shows the locations of jacks for external connections to the 75S-1 Receiver. The power cable plugs into socket J13. The ANT. jack is a nominal 50-ohm antenna input. The 4 Ω AUDIO jack is for connection of a speaker. The CW SIDETONE jack is a low-level (0.2 volt rms, typical) high impedance audio input to the receiver. The ANTI-VOX jack is a 500-ohm audio output, providing 5 to 15 volts rms at normal speaker volume levels. To connect for mute operation, a means of supplying a ground to receive must be connected to the MUTE jack. The receiver then must be operated in the STBY position. Removal of the ground when transmitting mutes the receiver.

Figure 1-2 shows a complete station interconnection for the 75S-1, 32S-1, and 312B-4 Station Control. The RG-58C/U cables indicated are slightly larger in diameter and two inches shorter than the cables supplied for control and audio functions.

CAUTION

DO NOT connect the a-c power cord to the 115-volt a-c line until the power plug, P6, has been plugged into J13. To avoid damage to the receiver, make sure the key on P6 is properly aligned with the keyway on J13.

1.3 INITIAL CHECKS.

Lift the top cover, and make sure the dummy load (see figure 4-1) is plugged into XTAL OSC OUTPUT jack unless the receiver is connected for transceiver service with the 32S-1 Transmitter. Make sure the dummy load is *not* plugged into VFO OUTPUT jack.

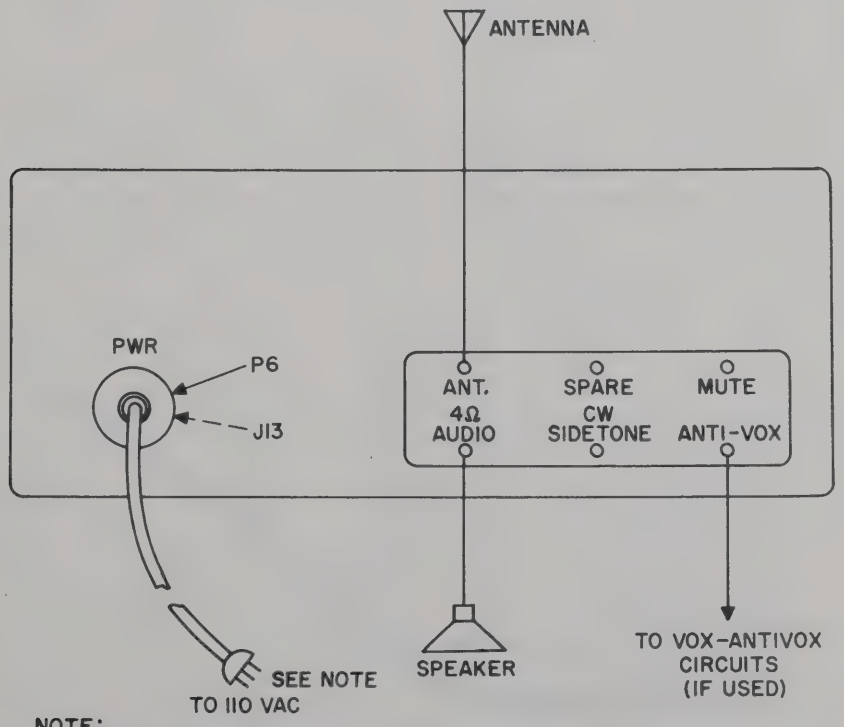

Figure 1-1. External Connections

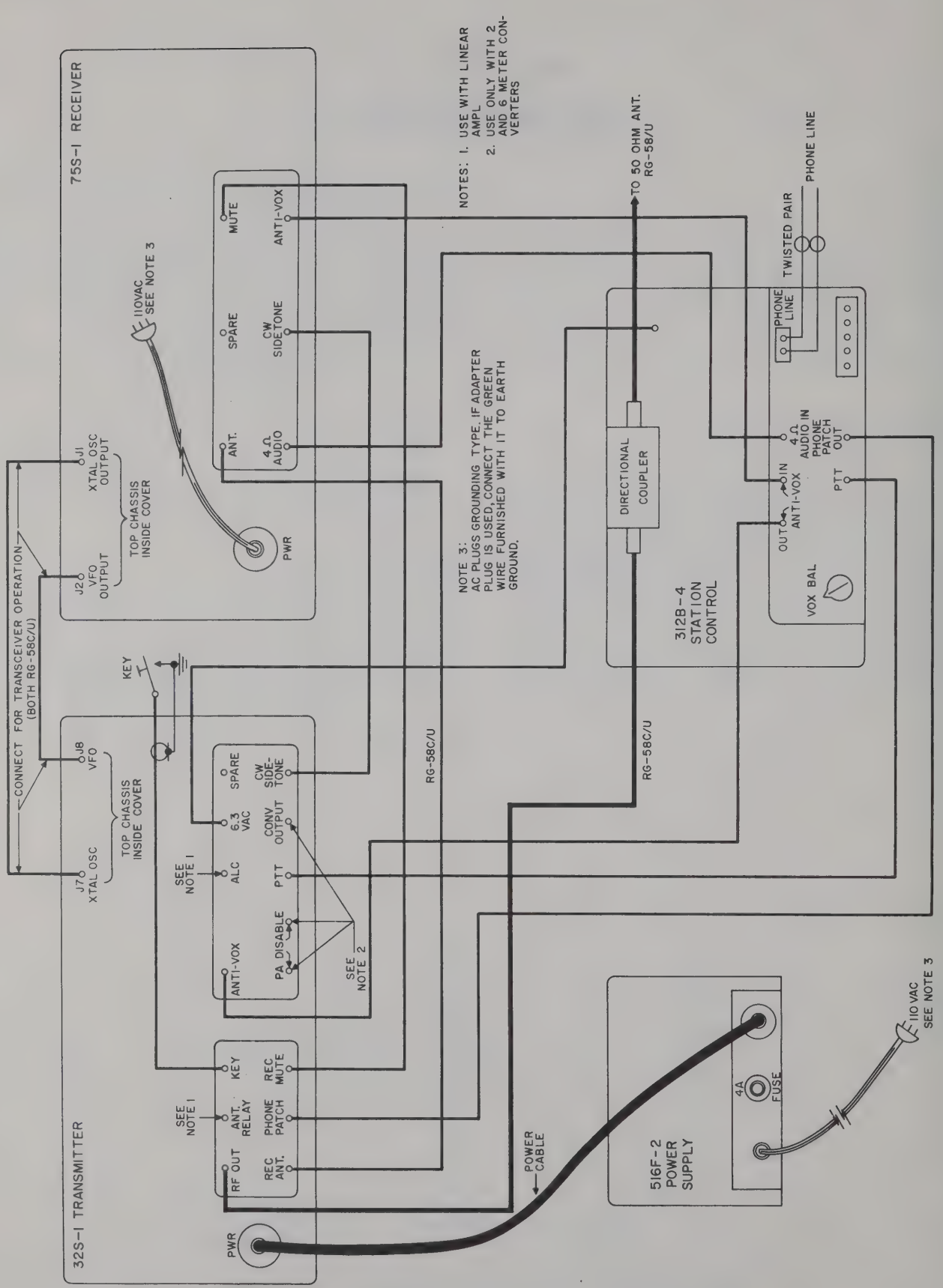

Figure 1-2. Station Interconnections

SECTION II
OPERATION

2.1 CALIBRATION.

a. After making external connections, set controls as shown in figure 2-1.

b. Set BAND switch (7) to desired frequency band. Set dial to 0, 100, or 200 with tuning knob (3).

c. Adjust PRESELECTOR (2) for maximum signal or noise output.

d. Tune back and forth near 0, 100, or 200 until calibrate signal is zero beat.

e. Adjust zero set knob (10) until dial is calibrated.

2.2 SINGLE-SIDEBAND TUNING.

a. Set controls as shown in figure 2-1, except set OFF-STBY-OPR-CAL switch (1) to OPR.

b. Set EMISSION switch (8) to desired sideband.

c. Peak PRESELECTOR control (2) for maximum signal or noise output.

d. Tune in signal, and adjust A.F. GAIN (4) for desired audio output level.

To read frequency, add the dial setting to the BAND switch setting. As an example, if the BAND switch is set to 3.8 and the dial is set to 5, the frequency is 3.805 mc. If the BAND switch is set to 3.8 and the dial to 170, the frequency is 3.970 mc.

2.3 AM TUNING.

a. Set controls as in paragraph 2.2, step a.

b. Set EMISSION switch (8) to AM.

c. Peak PRESELECTOR control (2) for maximum signal or noise output.

d. Tune in signal, and adjust A.F. GAIN (4) for desired audio output level.

2.4 CW TUNING.

a. Set up and tune as in paragraph 2.2.

b. CW may be tuned in either USB or LSB position of the EMISSION switch. True frequency of received CW signal can be read on dial when signal is zero beat, but receiver output amplitude at zero beat is reduced by the attenuation of the filter. With the 2.1-kc filter supplied, the audible CW beat note frequency is 1350 cps when the signal is centered in the filter passband. This beat note is tunable with the receiver tuning control to a minimum of 500 cps. When the accessory 500-cps filter is used, but the matching bfo crystal is not used, the CW beat note will be 1350 cps with the signal centered in the passband. When both the accessory 500-cps filter and its matching bfo crystal are used, the CW beat note is approximately 800 cps with the signal centered in the filter passband, and zero beat cannot be heard. Without the accessory filter, the receiver is dead when the EMISSION switch is in CW position.

c. To copy CW with avc, set R.F. GAIN to maximum and adjust A.F. GAIN for desired level. If avc action is not desired, reduce R.F. GAIN setting until S-meter does not kick with signals, and leave A.F. GAIN set as above. This method of operating results in optimum signal-to-noise ratio as well as more pleasing sidetone level. The practice of operating with A.F. GAIN at maximum and adjusting R.F. GAIN will degrade signal-to-noise performance of the receiver.

2.5 OPERATION OUTSIDE AMATEUR BANDS.

All amateur bands are covered except the 10-meter band for which only one crystal is furnished (for 28.5 to 28.7 mc). Two extra sockets are provided for additional crystals in this band. Figure 2-2 gives calibration curves for PRESELECTOR logging scale.

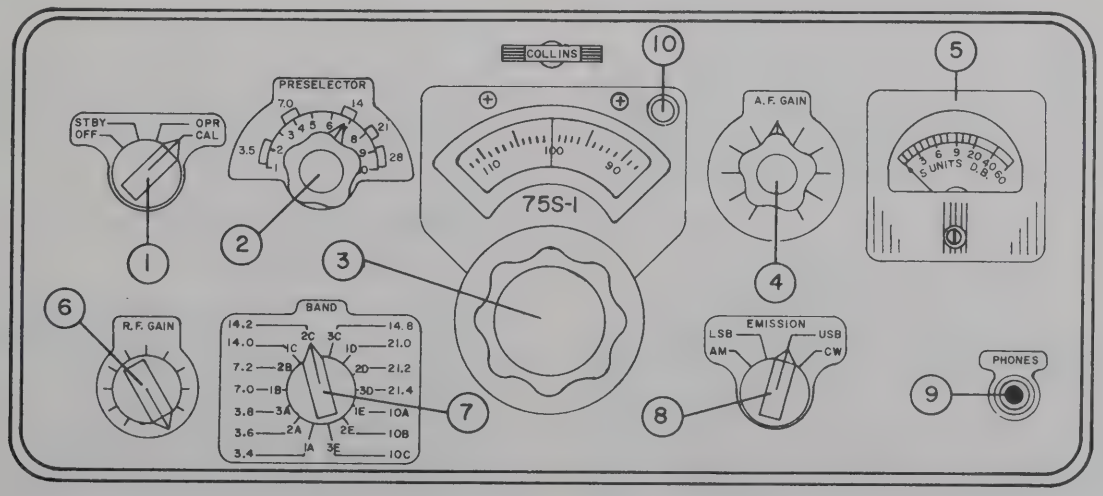

Figure 2-1. Panel Controls

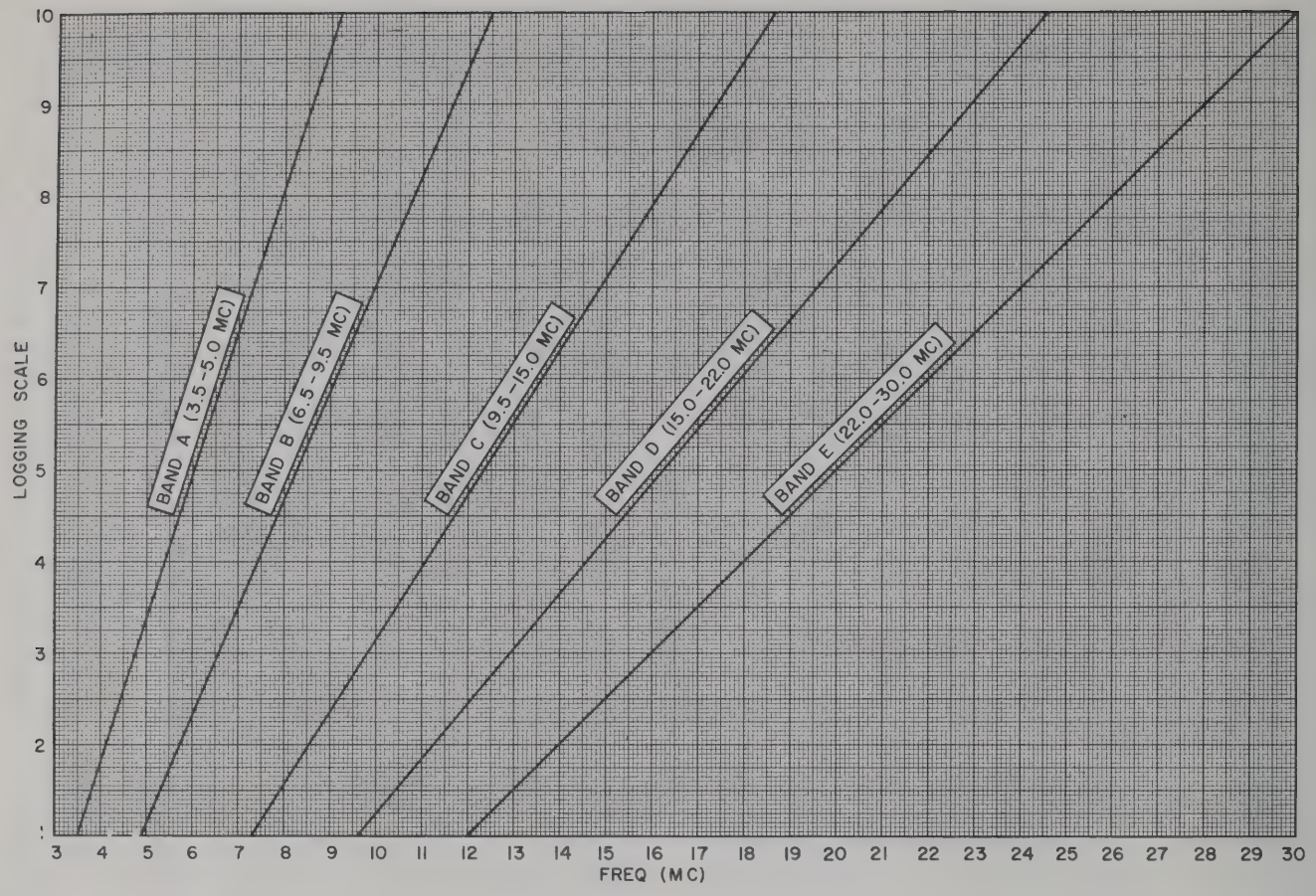

Figure 2-2. Preselector Calibration Curves

The 75S-1 Receiver can be operated at other frequencies outside the specified amateur bands or at other 10-meter frequencies by plugging the proper crystals into the mounting board. Select these crystals as follows:

a. If the lower edge of the desired 200-kc band is less than 11.800 mc, the required crystal frequency is equal to the lower edge of the desired band plus 3.155 mc. As an example, if the desired band is 4.0 to 4.2 mc, 4.0 mc plus 3.155 mc equals 7.155 mc.

b. If the lower edge of the desired 200-kc band is 12.00 mc or higher, the required crystal frequency is half the sum of the lower desired band edge and 3.155 mc. As an example, if the desired band is 14.4 mc to 14.6 mc,

$$\frac{14.4 + 3.155}{2} = 8.7775 \text{ mc.}$$

The plate circuit of the oscillator is tuned to twice the crystal frequency when crystal frequencies are this high.

c. Substitute or extra crystals should be plugged into the appropriate socket on the mounting board according to the best location in one of the five bands. The example cited in step b above should place the crystal in one of the sockets marked C. If two additional 10-meter crystals are used, they should be plugged into the sockets marked E. Table 2-1 lists crystal socket designations, switch positions (BAND), crystal frequencies furnished, and frequency range limitations. Figure 2-3 shows crystal socket locations. Extra crystals available are listed in section VI, Parts List.

NOTE

Do not attempt operation outside the total coverage band limits specified for BAND switch positions as given in table 2-1.

2.6 OPERATION IN TRANSCEIVER SERVICE WITH 32S-1 TRANSMITTER.

a. Using patch cables furnished with the 32S-1, connect the receiver vfo and high-frequency oscillator outputs to the transmitter as follows:

b. Remove the 100-ohm load plug from the XTAL OSC OUTPUT jack, J1, on the receiver, and connect one of the patch cables from J1 through the rear of the receiver and transmitter cabinets and into the XTAL OSC INPUT jack, J7, on transmitter chassis.

TABLE 2-1. CRYSTAL FREQUENCIES AND OPERATING BANDS

BAND SWITCH POSITION	FREQUENCY BAND	CRYSTAL SUPPLIED	CRYSTAL SOCKET CONNECTED	TOTAL COVERAGE
1A - 3.4	3.4 - 3.6 mc	6.555 mc	1A	
2A - 3.6	3.6 - 3.8 mc	6.755 mc	2A	A 3.4 - 5.0 mc
3A - 3.8	3.8 - 4.0 mc	6.955 mc	3A	
1B - 7.0	7.0 - 7.2 mc	10.155 mc	1B	
2B - 7.2	7.2 - 7.4 mc	10.355 mc	2B	B 6.5 - 9.5 mc
1C - 14.0	14.0 - 14.2 mc	8.5775 mc	1C	
2C - 14.2	14.2 - 14.4 mc	8.6775 mc	2C	C 9.5 - 15.0 mc
3C - 14.8	14.8 - 15.0 mc	8.9775 mc	3C	
1D - 21.0	21.0 - 21.2 mc	12.0775 mc	1D	
2D - 21.2	21.2 - 21.4 mc	12.1775 mc	2D	D 15.0 - 22.0 mc
3D - 21.4	21.4 - 21.6 mc	12.2775 mc	3D	
1E - 28A	28.5 - 28.7 mc	15.8275 mc	2E	
2E - 28B	As selected	Not supplied	2E	E 22.0 - 30.0 mc
3E - 28C	As selected	Not supplied	3E	

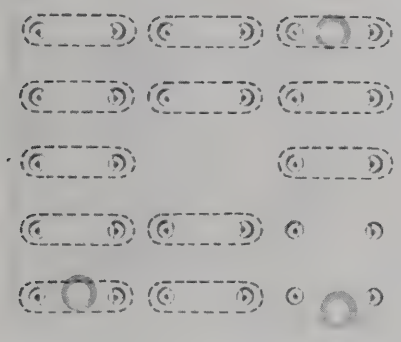

Figure 2-3. Crystal Socket Locations

c. Connect the other patch cable between the VFO OUTPUT jack, J2, and VFO INPUT jack, J8, on transmitter chassis. Make sure all other interconnections shown in figure 1-1 are made.

d. Be sure both transmitter and receiver EMISSION switches are set to the same sideband position. Be sure both BAND switches are in the same position. Set OFF-STBY-OPR-CAL switch to STBY position.

e. Turn the transmitter FREQ CONTROL switch to REC VFO position. The transmitter dial light goes out, and the receiver oscillators control the transmitter frequency.

f. Tune receiver to desired dial frequency or desired signal, peak the receiver PRESELECTOR and the transmitter EXCITER TUNING controls. If both these controls are peaked near the middle of the 200-kc band, the equipments may be operated across the selected band without further peaking. However, either or both may require repeaking on the lower frequency bands.

g. Tune and load the transmitter power amplifier as in normal operation. Switching FREQ CONTROL back to TRANS VFO position will allow separate operation of the two units within the 200-kc band in use.

CAUTION

When operating in transceiver service, DO NOT operate transmitter while receiver is tuned outside band limits; transmitted signal will be out of the band. DO NOT attempt operation with receiver and transmitter set on different 200-kc bands, even when operating in TRANS VFO position. With patch cables connected for transceiver operation, the receiver h-f crystal oscillator controls injection frequency to the transmitter second mixer.

h. To restore both receiver and transmitter to normal operation, remove the two patch cables connecting oscillator signals, replace P1 in J7 on the transmitter chassis, and replace the 100-ohm load plug, P1, in the XTAL OSC OUTPUT jack, J1 on receiver chassis.

2.7 USE OF 75S-1 WITH OTHER COLLINS TRANSMITTERS.

2.7.1 75S-1 WITH KWS-1. - Mute by connecting pin 5 and 6 on J102 (Rec. Disable) to MUTE jack on 75S-1. Connect 75S-1 ANTIVOX jack to 500-ohm audio (pin 7) on J102 of KWS-1. Set OFF-STBY-OPR-CAL switch to STBY position.

2.7.2 75S-1 WITH 32V-3. - Connect MUTE jack on 75S-1 to receiver disabling (pins 24 and 25). Set OFF-STBY-OPR-CAL switch to STBY.

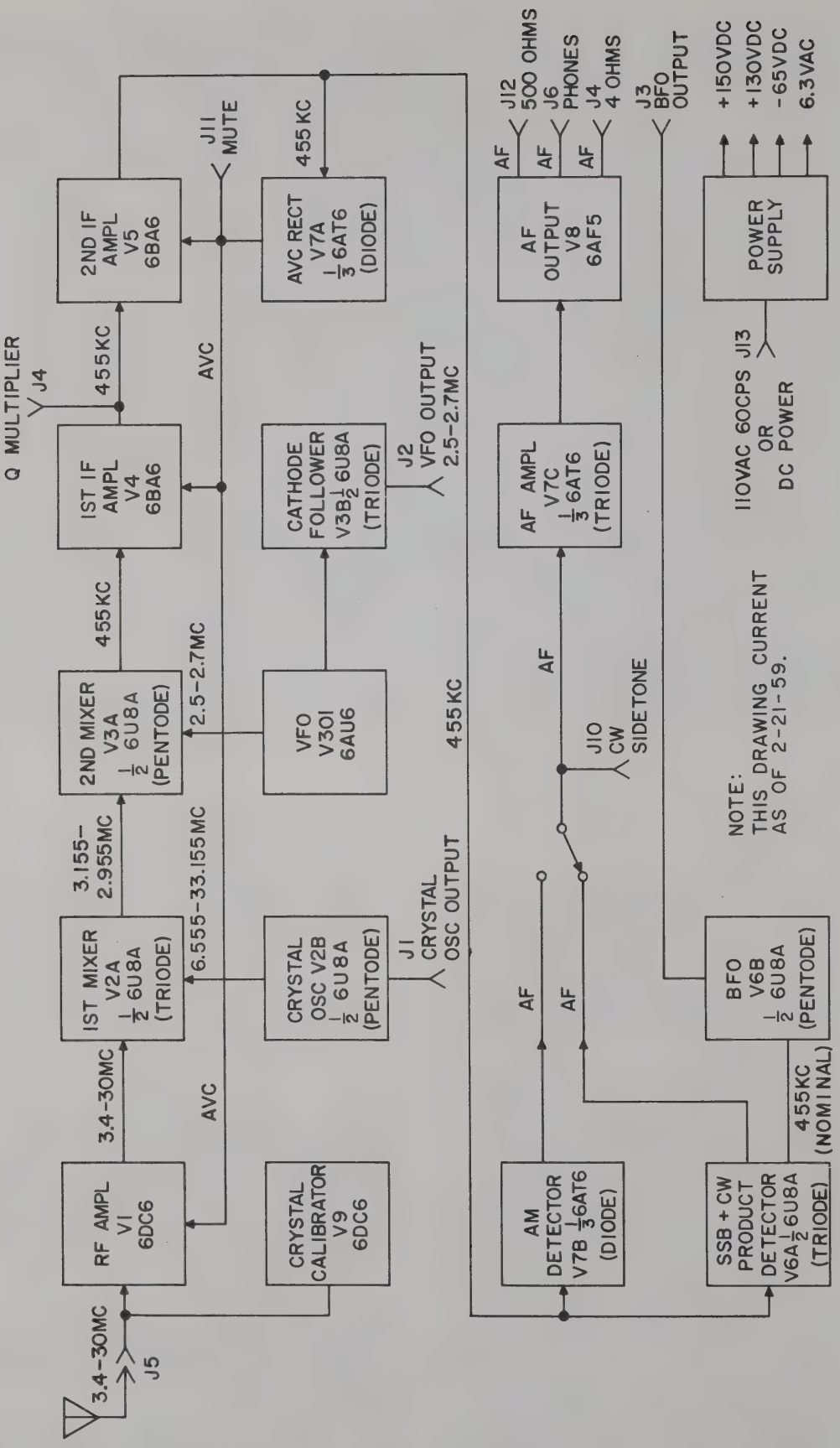

Figure 3-1. Block Diagram

SECTION III
PRINCIPLES OF OPERATION

3.1 BLOCK DIAGRAM.

Figure 3-1 is a block diagram of 75S-1 Receiver. The 75S-1 is a double-conversion receiver with crystal-controlled high-frequency oscillator and band-pass i-f. Separate detectors for AM and SSB are provided. Outputs from the high-frequency oscillator and the vfo are available at jacks on the chassis for controlling frequencies of companion 32S-1 Transmitter when used in transceiver service. Figure 7-1 is a schematic diagram of the receiver.

3.2 R-F CIRCUITS.

One set of slug-tuned coils is used to cover the entire tuning range with appropriate capacitance switched in by BAND switch sections S2, S3, and S4. The r-f amplifier tube, V1, is a type 6DC6. Its output is applied to the grid of the first mixer, V2A. High-frequency injection signal is coupled from the crystal oscillator to the cathode of V2A. On any band selected, the crystal oscillator output frequency is 3.155 mc higher than the lower edge of the desired band. The difference between the crystal oscillator frequency and the desired frequency is between 3.155 mc and 2.955 mc, or the band-pass i-f frequency.

3.3 I-F CIRCUITS.

The 3.155- to 2.955-mc variable i-f frequency is coupled through a band-pass network, consisting of T1 and L4, to the grid of the second mixer, V3A. This mixer is the pentode section of a type 6U8A with vfo injection signal at its cathode. Depending on the setting of EMISSION switch S2, the 455-kc second mixer output is coupled through CW filter FL1 (not supplied with receiver), AM i-f transformers T8 and T7, or SSB filter FL2 to the first i-f amplifier, V4. The i-f amplifiers, V4 and V5, are conventionally coupled. The second i-f amplifier, V5, also operates the S-meter.

3.4 A-F CIRCUITS.

Output from the second i-f amplifier, V5, is coupled from transformer T2 to the grid of CW/SSB product detector, V6A, and to the diodes of V7. Beat-frequency oscillator injection signal is coupled to the cathode of the product detector. Product detector output is filtered and connected to EMISSION switch section S8 where it is selected and fed to the grid of the triode section of V7. The AM audio signal from one of the V7 diode plates is also connected to S8. Output from the triode amplifier section of V7 is coupled to the audio output tube, V8, from which it may be fed to phones, speaker, or phone patch by plugging into J6, J8, or J12, respectively.

3.5 OSCILLATOR CIRCUITS.

The receiver contains four oscillators. They are crystal calibrator, crystal oscillator, vfo and bfo. The 100-kc crystal calibrator, V9, is a type 6DC6 tube. Its output is coupled to the antenna coil, T5. The high-frequency crystal oscillator, V2B, is the pentode section of 6U8A. For high-frequency injection up to 14.955 mc, the oscillator operates on crystal fundamental frequencies. For injection frequencies higher than 14.955 mc, the oscillator doubles the crystal frequency in its plate circuit. Oscillator output is available at J1 for frequency control of companion transmitter such as the 32S-1. Unless this jack is connected to external equipment, the load resistor and plug, P1, is left plugged into J1 to provide proper oscillator plate circuit impedance. Instructions for calculating crystal frequencies required for desired bands are given in section II. The vfo is a 70K-2 Oscillator installed as an integral unit. Its frequency range is 2.5 to 2.7 mc. Oscillator output is fed to the cathode of the second mixer and to the grid of a cathode follower, V3B. The cathode follower (triode section of a 6U8A) isolates the vfo from load variations when a companion transmitter, such as the 32S-1, is connected to it in transceiver service. The bfo is crystal controlled by one of two crystals for CW and SSB signals. If the accessory CW filter is used, a matched crystal is installed. EMISSION switch section S9 selects Y16 for CW and USB positions and Y15 for LSB position. Output from the bfo is connected to the product detector and to the BFO TEST jack, J3.

SECTION IV
SERVICE INSTRUCTIONS

4.1 GENERAL.

Included in this section are signal tracing procedures, alignment procedures, and voltage and resistance measurements.

4.2 SIGNAL TRACING.

Table 4-1 lists significant test points and normal signal levels. The first three measurements were made with one-watt audio power output as reference level. An audio power meter was connected to the AUDIO output jack at the back of the receiver, and the output of the audio oscillator (for first two readings) was monitored with a sensitive a-c vtvm. For the second measurement, it may be necessary to connect a resistive voltage divider across the a-f oscillator output terminals and use the tap voltage for injection and measurement. This divider may be made of an 8200-ohm resistor and a 220-ohm resistor in series from the hot terminal to the ground terminal. Connect with the 220-ohm resistor to the ground terminal. The third measurement was made with 455-kc signal from an r-f signal generator, using one-watt audio output power as reference. All other measurements, except as indicated in table 4-1, were made with agc threshold as reference. The signal generator voltage is injected at the test point, and agc threshold is monitored on a d-c vtvm (use low range). Agc threshold voltage is the point at which the d-c vtvm indication just changes with slightly increased signal level. Make sure the signal generator frequency is adjusted to produce an agc peak indication. This is necessary when the signal must pass through the mechanical filter. The receiver was tuned to 14.1 mc and the signal generator voltage was injected at the indicated test points. The signal voltage values were taken from signal generator output attenuator. All values are nominal and may vary plus or minus 20 percent without degrading performance.

TABLE 4-1. SIGNAL LEVELS

TEST POINT	FREQUENCY	SIGNAL VOLTAGE	REFERENCE	MEASURING INSTRUMENT
V8-1	1000 Cps	5.4 volts	1-watt audio output	A-c vtvm
V7-1	1000 Cps	0.2 volt	1-watt audio output	A-c vtvm
V6A-9	455 kc	75 millivolts	1-watt audio output	Signal generator output attenuator
V6A-8	455 kc (BFO INJECTION)	1.65 volts		R-f vtvm
V5-1	455 kc	48 millivolts	Agc threshold	Signal generator output attenuator
V4-1	455 kc	350 microvolts	Agc threshold	Signal generator output attenuator
V3A-6	455 kc	1400 microvolts	Agc threshold	Signal generator output attenuator
V3A-7	2.5 - 2.7 mc (VFO INJECTION)	2.0 - 2.5 volts		R-f vtvm
V3A-2	3.055 mc	100 microvolts	Agc threshold	Signal generator output attenuator
V2A-8	17.155 mc (HF OSC INJECTION)	0.8 - 2.0 volts		R-f vtvm
V2A-9	14.1 mc	30 microvolts	Agc threshold	Signal generator output attenuator
V1-1	14.1 mc	9 microvolts	Agc threshold	Signal generator output attenuator
J5 (ANT)	14.1 mc	1.1 microvolt	Agc threshold	Signal generator output attenuator

4.3 VOLTAGE AND RESISTANCE MEASUREMENTS.

Table 4-2 lists voltage and resistance measurements on all tube sockets of the 75S-1 except that of the vfo tube, V301. *Do not open* the oscillator can. Measurements were made under the following conditions:

a. All measurements with vtvm and with all tubes in sockets. Unless otherwise noted in table, all measurements made with R.F. GAIN at maximum, A.F. GAIN at minimum, EMISSION switch in USB position, BAND switch in 14.2 position, vfo dial at 100, and OFF-STBY-OPR-CAL switch in OPR position.

b. Resistances of less than one ohm listed as zero.

c. Voltage measurements made with the equipment operating.

d. Resistance measurements made with power supply connection removed from J13.

e. All measurements made from socket pin to ground.

TABLE 4-2. VOLTAGE AND RESISTANCE MEASUREMENTS

		PIN NUMBER								
TUBE		1	2	3	4	5	6	7	8	9
V1	D-C V	-1.0	0	0		+130	+66	0		
	A-C V				6.3					
	Ohms	6 meg	0	0	0	35K**	70K**	0		
V2	D-C V	+120	-5.0***	+120	0		+120	0	+2.7	0
	A-C V					6.3				
	Ohms	35K**	90K	35K**	0	0	35K**	0	1000	230K
V3	D-C V	+111	0	+111		0	+111	+3.8	+4.7	+2.3
	A-C V				6.3					
	Ohms	35K**	67	35K**			35K**	1000	640	94K
V4	D-C V	-0.86	0	0		+130	+68	+1.05		
	A-C V				6.3					
	Ohms	3.3 meg		0	0	35K**	35K**	216		
V5	D-C V	-0.9	0	0		+130	+67	+0.5		
	A-C V				6.3					
	Ohms	3.2 meg	0	0	0	35K**	35K**	80		
V6	D-C V	+53	-3.6	+40		0	+115	0	+2.2	0
	A-C V				6.3					
	Ohms	150K**	1 meg	250K**	0	0	35K**	0	3200	1200
V7	D-C V	+0.9	+2.5		0	-0.9	0	+98		
	A-C V			6.3						
	Ohms	600K	12K	0	0	3.1 meg	inf	140K**		
V8	D-C V	-10.5	0	0		+122	+118	-10.5		
	A-C V				6.3					
	Ohms	240K	0	0	0	35K**	35K**	240K		
V9*	D-C V	-36*	+0.55*	0*		+97*	+41*	0*		
	A-C V				6.3*					
	Ohms	1 meg	950	0	0	260K**	260K**	0		

*OFF-STBY-OPR-CAL switch in CAL position.
**Resistance may vary with diode and electrolytic condition.
***May vary from -1.0 to -6.0 v, depending upon crystal activity.

4.4 ALIGNMENT PROCEDURE. (Refer to figure 4-1.)

4.4.1 455-KILOCYCLE I-F ALIGNMENT.

a. Remove vfo tube, V301, from socket.
b. Set EMISSION switch to USB.
c. Connect signal generator to pin 2 of V3, and increase signal generator output until S-meter shows slight indication (S3). Rock the signal generator frequency if necessary to approximately center in the filter pass band.

NOTE

If a vtvm is available, it may be connected to the avc bus and used as alignment peak indicator.

d. Adjust the slugs of L6 and T2 for peak indication on S-meter. Reduce signal generator output as necessary to keep S-meter indication low. Repeat L6 and T2 as in any standard alignment procedure.
e. Replace vfo tube.

4.4.2 BAND-PASS I-F ALIGNMENT.

a. Set BAND switch to an unused 28-mc position. If all 28-mc crystal sockets are filled, remove one crystal and set BAND switch to that position. This disables the crystal oscillator, V2B. Set EMISSION switch to CW.
b. Connect a signal generator to the XTAL OSC OUTPUT jack, J1, and set to 3.055 megacycles. Set the receiver tuning dial to 100, and increase signal generator output until signal is heard in speaker.
c. Make two swamping tools by connecting a 0.01-uf capacitor in series with a 1000-ohm resistor and connecting alligator clips to the two remaining pigtails.
d. Connect one swamping network from T1 primary (terminal 1) to ground and the other from L4 (terminal 1) to ground.
e. Peak the secondary of T1 (top of can) using a Walsco 2543 tuning tool.
f. Remove both swamping networks and swamp T1 secondary (terminal 3 to ground). Peak T1 primary (bottom of can) and peak L4.

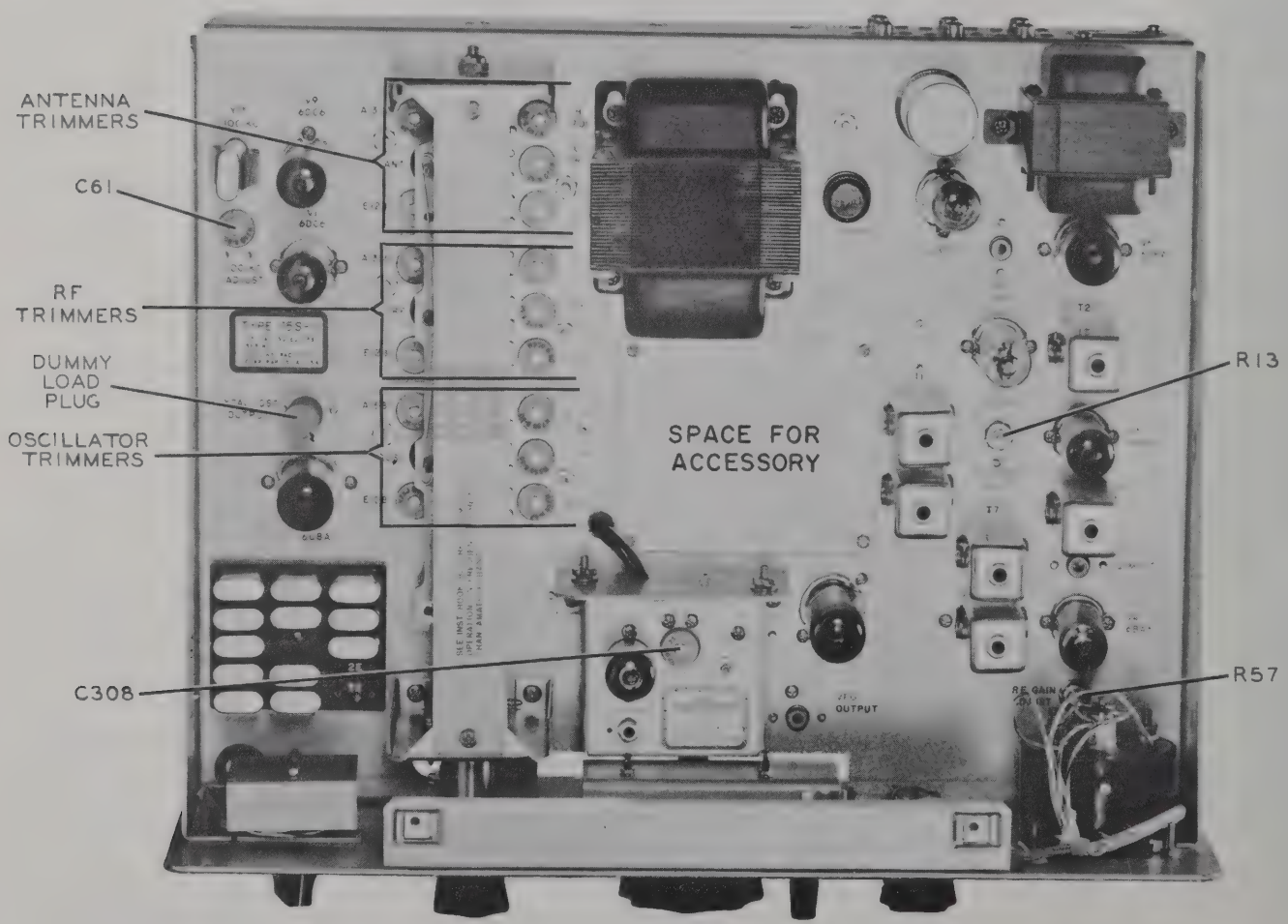

Figure 4-1. Location of Adjustments

g. Remove swamping network from T1 secondary This completes band-pass i-f alignment.

4.4.3 R-F CIRCUIT ALIGNMENTS. (Refer to figure 4-1 for trimmer identification.)

a. Set both (A) 3.8 RF and ANT trimmer capacitors so the large notches point straight to the rear of the chassis. Set the (A) 3.8 OSC trimmer so its large notch points at V1. Leave tuning dial set at 100 for the following steps.

b. Set EMISSION switch to AM, OFF-STBY-OPR-CAL switch to OPR, BAND switch to 3.6, and PRESELECTOR to 1.9 on the logging scale.

c. Remove load plug, P1, from XTAL OSC OUTPUT jack, J1, on top of the chassis, and connect an r-f vtvm to J1 across a 100-ohm resistor.

d. Connect a signal generator output to the ANT jack across a 47-ohm, noninductive resistor. Set signal generator frequency to 3.7 mc. Rock the signal generator dial slightly to peak the S-meter indication. Adjust signal generator output as necessary to keep S-meter indication low (S3 or less).

e. Adjust (A) 3.8 OSC tuning slug for maximum output on vtvm.

f. Adjust (A) 3.8 RF and ANT slugs for peak S-meter indication.

g. Set BAND switch to 28A, PRESELECTOR to 9.1 on the logging scale, and signal generator frequency to 28.6 mc. Rock signal generator dial to peak the S-meter reading. Keep S-meter reading at S-3 by adjusting signal generator output level control as necessary.

h. Adjust (E) 28 OSC trimmer for peak vtvm indication.

i. Adjust (E) 28 RF and ANT trimmers for peak S-meter indication. Adjust signal generator output level as necessary to keep S-meter indication at S-3.

j. Set BAND switch to 21.0. Set PRESELECTOR to 8.0 on the logging scale. Set signal generator to 21.1 mc. Rock signal generator dial to peak S-meter reading, and adjust its output level as necessary to keep S-meter indication at S-3.

k. Adjust (D) 21 OSC trimmer for peak vtvm indication.

l. Adjust (D) 21 RF and ANT trimmers for maximum S-meter indication, adjusting signal generator output as necessary to keep S-meter indication at S-3.

m. Set BAND switch to 14.8. Set PRESELECTOR to 7.0 on the logging scale.

n. Adjust (C) 14 OSC trimmer for peak vtvm indication.

o. Set BAND switch to 14.2. Set PRESELECTOR to the point between 6.0 and 7.0 on the logging scale which produces the peak vtvm indication. Set signal generator frequency to 14.3 mc and rock signal generator dial to peak the S-meter indication.

p. Adjust (C) 14 RF and ANT trimmers for peak S-meter indication. Adjust signal generator output level as necessary to keep S-meter indication at S-3.

q. Set BAND switch to 7.0. Set PRESELECTOR to 3.9 on the logging scale. Set signal generator frequency to 7.1 mc and rock signal generator dial to peak the S-meter indication.

r. Adjust (B) 7 OSC trimmer for peak vtvm indication.

s. Adjust (B) 7 RF and ANT trimmers for peak S-meter indication. Adjust signal generator output as necessary to keep S-meter indication at S-3.

t. Disconnect the signal generator and vtvm. Replace P1 in J1. This completes the r-f alignment.

u. If signal generator and vacuum-tube voltmeter are not available for this alignment, alignment using only the receiver's calibration signal and S-meter indication will be satisfactory. However, alignment with the test equipment will result in optimum receiver sensitivity.

4.4.4 VFO SIDEBAND FREQUENCY SHIFT ADJUSTMENT.

a. Set BAND switch to 3.6 position. Set PRESELECTOR to approximately 1.9 on logging scale. Set EMISSION switch to LSB, and set OFF-STBY-OPR-CAL switch to CAL position. Tune dial near 100 until calibrate signal is zero beat, and do not touch for following procedure.

b. Switch to USB, and adjust C308 (on vfo) to zero beat.

4.4.5 I-F GAIN AND S-METER ZERO ADJUSTMENTS.

a. Set receiver to middle of favorite operating band, and peak PRESELECTOR for maximum output. Set R.F. GAIN control (front panel) to maximum clockwise position. Tune calibrated signal generator to same frequency as receiver, and set A.F. GAIN control to maximum counterclockwise position.

b. Short ANTENNA jack to ground, and adjust S-METER ADJUST (R13) so S-meter reads zero.

c. Connect a signal generator to the ANTENNA jack J5 through a 47-ohm resistor (series). Adjust the signal generator for 1.5 microvolt output. Connect a d-c vtvm to the 75S-1 agc bus. Tune the receiver to the generator signal.

d. Adjust R57 for agc threshold. This is the point (signal level) at which the vtvm just begins to indicate an increase in agc voltage. Disconnect test equipment.

4.4.6 CRYSTAL CALIBRATOR ADJUSTMENT.

a. Tune WWV to zero beat at 15.0 mc at a time when the station is not transmitting a tone.

b. Turn the OFF-STBY-OPR-CAL switch to CAL position. Adjust 100 KC ADJUST trimmer, C61, for zero beat of calibrator signal.

4.4.7 VFO DIAL CALIBRATION.

In case the 75S-1 vfo has drifted and there is no end-point spread, the dial can be calibrated by loosening the setscrews on the dial hub and slipping the dial mechanism on the oscillator shaft until zero beat occurs at center of window. Make certain there is not more than ±1-kc end-point spread (after mid-band calibration) before making this adjustment. End-point spread means that zero beat does not occur at both 0 and 200 ±1-kc on the dial.

If there is end-point spread and zero beat does not coincide at 0 and 200 ±1 kc on the dial, make the following adjustments:

a. Set OFF-STBY-OPR-CAL switch to CAL position and tune in the calibrate signal for zero beat near 200 on the dial (on any band).
b. With ZERO SET knob, set hairline to 200.
c. Tune calibrate signal to zero beat at the 0 end of the dial. Note the difference in kilocycles between the hairline and the dial zero (example:1.5 kc).
d. Without moving the hairline, move the dial to the other side of zero at twice the noted error (example: 3 kc).
e. Adjust L302 for zero beat. The slug-tuned inductor, L302, is accessible at the top of the vfo can.
f. With ZERO SET knob, move the hairline to dial zero.
g. Tune the calibrate signal to zero beat at the 200 end of the dial. If zero beat does not occur at exactly 200, repeat steps b through e.
h. If, after adjustment of end points, the hairline is not vertical in the window, loosen the setscrews on the dial hub and move the dial with respect to the oscillator shaft so that zero beat occurs with the end points (0 to 200) set at center.
i. After these adjustments of the vfo calibration, make the vfo sideband frequency shift adjustment according to paragraph 4.4.4.

SECTION V

SPECIFICATIONS

5.1 75S-1 RECEIVER.

The 75S-1 receives single-sideband, CW, or AM signals in all amateur bands between 3.4 and 30.0 mc.

5.2 FREQUENCY COVERAGE.

The receiver coverage is in 14 bands, each 200 kilocycles wide. With crystals furnished, they cover the entire amateur bands of 80 meters, 40 meters, 20 meters, 15 meters, a 14.8- to 15.0-mc band including WWV, and the 28.5- to 28.7-mc portion of the 10-meter band. The two remaining crystal sockets may be used for crystals selected to provide two additional 200-kc bands within the 10-meter band. Other crystals may be substituted for those furnished to place the receiver at other frequencies throughout the range.

5.3 REQUIREMENTS FOR OPERATION.

The receiver requires a 110-volt, 50- to 60-cps, a-c power source and consumes approximately 90 watts of power from the line. It may be operated mobile from a d-c power supply by using the proper connector. In this service, the receiver requires +150 volts d-c at 125 ma, -70 volts d-c at 5 ma, and 6.0 volts d-c at 5.5 amperes, or 12.0 to 14.0 volts d-c at 2.75 amperes, or 24.0 to 28.0 volts d-c at 1.375 amperes. The 75S-1 should be connected to a speaker with 4-ohm voice coil. Any type headphones may be used.

5.4 SPECIFICATIONS.

Frequency range	3.4 to 30.0 megacycles. With crystals furnished, bands are as follows: 3.4 to 3.6 mc, 3.6 to 3.8 mc, 3.8 to 4.0 mc, 7.0 to 7.2 mc, 7.2 to 7.4 mc, 14.0 to 14.2 mc, 14.2 to 14.4 mc, 14.8 to 15.0 mc, 21.0 to 21.2 mc, 21.2 to 21.4 mc, 21.4 to 21.6 mc, and 28.5 to 28.7 mc.
Mode	Single sideband (selectable), CW, or AM.
Sensitivity	One microvolt for 15-db signal-plus-noise to noise ratio for SSB operation.
Selectivity	SSB: 2.1 kc at 6 db down, 4.2 kc at 60 db down. CW: 0.5 kc at 6 db down, 1.0 kc at 60 db down. (with accessory filter) AM: 4.5 kc at 6 db down, 25 kc at 60 db down.
Spurious response	Image rejection better than 50 db. Internal spurious signals below one microvolt equivalent antenna input.

Frequency stability . . . . . After warmup, stable to within 100 cps.

Dial accuracy (after midband calibration) . . . Better than one kc on any band.

Dial backlash . . . . . Less than 50 cycles.

Output level . . . . . 0.25 watt at avc threshold. 1.8 watts maximum.

Size . . . . . 6-9/16 inches high, 14-3/4 inches wide, 11-1/2 inches deep.

Weight . . . . . 20 pounds.

5.5 TUBE, FUSE, AND SEMICONDUCTOR COMPLEMENT.

TABLE 5-1. TUBES, FUSES, AND SEMICONDUCTORS

SYMBOL	FUNCTION	TYPE	SYMBOL	FUNCTION	TYPE
V1	R-f amplifier	6DC6	V8	A-f output power amplifier	6BF5
V2A	First mixer	1/2 6U8A	V9	Crystal calibrator	6DC6
V2B	Crystal oscillator	1/2 6U8A	V301	Variable-frequency oscillator	6AU6
V3A	Second mixer	1/2 6U8A	CR1	Power rectifier	1N1084
V3B	Vfo isolation amplifier	1/2 6U8A	CR2	Power rectifier	1N1084
V4	First i-f amplifier	6BA6	CR3	Bias rectifier	50 ma selenium
V5	Second i-f amplifier	6BA6	CR301	Frequency shift switch	1N34A
V6A	Product detector	1/2 6U8A	F1	Power supply fuse	2 amperes
V6B	Beat-frequency oscillator	1/2 6U8A			
V7	AM detector, avc rectifier, a-f amplifier	6AT6			

5.6 AVAILABLE ACCESSORIES.

TABLE 5-2. AVAILABLE ACCESSORIES

ITEM	FUNCTION	COLLINS PART NUMBER
F455Q-5 Filter	0.5 kc band pass for CW.	526-9367-00
455.8-Kc Crystal	BFO.	290-8707-00
312B-3 Speaker Box	Station speaker.	522-1166-00
312B-4 Station Control	Speaker, phone patch, directional wattmeter, and station control switches.	522-1167-00

TABLE 5-2. AVAILABLE ACCESSORIES (Cont)

ITEM	FUNCTION	COLLINS PART NUMBER
351E-1 Mounting Plate	Table mount for 75S-1/32S-1.	522-1479-00
351E-2 Mounting Plate	Table mount for 312B-4/516F-2.	522-1480-00
351E-3 Mounting Plate	Table mount for 312B-3.	522-1481-00
Extra crystals	Additional band coverage.	See section VI, Parts List.

SECTION VI
PARTS LIST

75S-1 Receiver

ITEM	DESCRIPTION	COLLINS PART NO.
	75S-1 RECEIVER	522-1168-00
C1, C2	CAPACITOR, FIXED, MICA: 510 uuf ±5%; 300 vdcw	912-2867-00
C3, C5, C7, C16, C18, C20, C22, C61, C69, C71, C73, C75, C76	CAPACITOR, VARIABLE, CERAMIC: 8 to 50 uuf, 350 vdcw	917-1075-00
C4, C95	CAPACITOR, FIXED, MICA: 240 uuf ±5%; 500 vdcw	912-2843-00
C6, C34	CAPACITOR, FIXED, MICA: 100 uuf ±5%; 500 vdcw	912-2816-00
C8, C97	CAPACITOR, FIXED, PAPER: 0.1 uf +20% -10%; 200 vdcw	931-0165-00
C9, C10, C23	CAPACITOR, VARIABLE, CERAMIC: 5 to 25 uuf, 350 vdcw	917-1073-00
C11, C14, C32, C37, C48, C77, C90, C105	CAPACITOR, FIXED, CERAMIC: 1000 uuf +100% -20%; 500 vdcw	913-3009-00
C12, C51	CAPACITOR, FIXED, CERAMIC: 1.0 uuf ±1/4 uuf; 500 vdcw	916-0070-00
C13, C15, C25, C30, C31, C38, C40, C42, C43, C45, C49, C52, C54, C55, C57, C58, C62, C65, C66, C68, C80, C85, C86, C87, C89, C96, C100, C104, C109 thru C111, C113 thru C119	CAPACITOR, FIXED, CERAMIC: 10, 000 uuf +100% -20%; 500 vdcw	913-3013-00
C17	CAPACITOR, FIXED, MICA: 510 uuf ±2%; 300 vdcw	912-2866-00
C19	CAPACITOR, FIXED, MICA: 220 uuf ±5%; 500 vdcw	912-2840-00
C21, C74	CAPACITOR, FIXED, MICA: 68 uuf ±10%; 500 vdcw	912-2805-00
C24	PART OF T1	
C26	PART OF T1	
C27, C78, C93, C120	CAPACITOR, FIXED, MICA: 15 uuf ±10%; 500 vdcw	912-2760-00
C28	PART OF L4	
C29	PART OF T1	
C33	CAPACITOR, FIXED MICA: 180 uuf ±5%; 500 vdcw	912-2834-00
C35	PART OF T7	
C36	PART OF T7	
C39	PART OF L6	
C41, C63, C64, C79, C94	CAPACITOR, FIXED, MICA: 100 uuf ±10%; 500 vdcw	912-2817-00
C44	PART OF T2	
C46	CAPACITOR, FIXED, MICA: 10 uuf ±10%; 500 vdcw	912-2754-00
C50, C102	CAPACITOR, FIXED, PAPER: 0.05 uf +30% -10%; 200 vdcw	931-0163-00
C53, C84, C106	CAPACITOR, FIXED, MICA: 470 uuf ±10%; 300 vdcw	912-2865-00
C56	CAPACITOR, FIXED, DRY ELECTROLYTIC: 100 uf -10% +75%; 6 vdcw	183-1782-00
C59	CAPACITOR, FIXED, DRY ELECTORLYTIC: 3 section, 40 uf ea; -10% +40%; 150 vdcw	183-1701-00
C60	CAPACITOR, FIXED, DRY ELECTROLYTIC: 40 uf -10% +100%; 150 vdcw	183-1044-00
C67, C82	CAPACITOR, FIXED, MICA: 20 uuf ±10% 500 vdcw	912-2766-00
C70	CAPACITOR, FIXED MICA: 200 uuf, ±5%, 500 vdcw	912-2837-00
C72	CAPACITOR, FIXED, MICA: 130 uuf ±5%; 500 vdcw	912-2825-00
C79	CAPACITOR, FIXED, MICA: 47 uuf ±10%; 500 vdcw	912-2793-00
C81	PART OF T2	
C83	CAPACITOR, FIXED, MICA: 120 uuf ±10%; 500 vdcw	912-2823-00
C91	PART OF L4	
C92	CAPACITOR, FIXED, CERAMIC: 3 uuf ±1/4 uuf; 500 vdcw	916-0144-00
C101, C112	CAPACITOR, FIXED CERAMIC: .01 uf, +100% -20%, 1000 vdcw	913-3922-00
C103	PART OF T8	
C107	CAPACITOR, FIXED, DRY ELECTROLYTIC: 10 uuf -10% +100%; 150 vdcw	183-1040-00
C108	PART OF T8	
CR1, CR2	DIODE: type 1N1084	353-1567-00
CR3	RECTIFIER, METALLIC: selenium, single phase half wave	353-0153-00
DS1	LAMP, INCANDESCENT: 6.3 v, 0.15 amp; 1-1/8 in. lg; clear	262-3240-00
DS2	PART OF M1	262-3240-00
E1, E2, E3	CORE, FERRITE, ADJUSTABLE TUNING: ferrite slug for tuning r-f coils	288-2214-00
F1	FUSE, CARTRIDGE: 2 amp, 250 v dc, ferrule terminal	264-4070-00
FL1	FILTER, BAND PASS: 455.0 kc oper freq, 500 cps bandwidth; Collins type F455Q-5 (not furnished)	526-9367-00

ITEM	DESCRIPTION	COLLINS PART NO.
FL2	FILTER, BAND PASS: 455.0 kc oper freq, 2.125 kc bandwidth, 17,000 ohms input and output; Collins	526-9337-00
J1 thru J5, J8, J10 J11, J12	JACK, TIP: accommodates 1/8 in. plug; ceramic insulation, brass contacts	360-0088-00
J6, J9	JACK, TELEPHONE: spring leaf contacts, J1-1B contact arrangement	360-0136-00
J13	CONNECTOR, RECEPTACLE, ELECTRICAL: 11 male pin contacts	372-1757-00
L1	NOT USED	
L2	COIL, RADIO FREQUENCY: 15 turns, single layer wound, #28 AWG wire, phenolic core; Collins	543-8025-002
L3	NOT USED	
L4	TUNING UNIT, RADIO FREQ: 2.945 to 3.165 kc, 1 adjustment included with T1 as set	278-1721-00
L5, L9, C10	COIL, RADIO FREQUENCY: 3 pi wound, 225 turns ea, 2.0 mh, #40 AWG	240-0084-00
L6	TUNING UNIT, RADIO FREQUENCY: freq range 440 kc to 470 kc	278-0277-00
L7	COIL, RADIO FREQUENCY: single layer wound, 10 uh inductance	240-0149-00
L8	NOT USED	
L11, L13	COIL, RADIO FREQUENCY: 3 universal wound pi sections; 112 turns per section; copper wire #36 AWG; 500 uh	240-0073-00
L12	REACTOR: 3.0 hy, 0.120A, 100 ohms resistance	668-0020-00
M1	METER: Carrier level 0-1 Ma, calibrated in S-units	458-0044-00
P1	XTAL OSC LOAD: 100 ohm load and plug assembly; Collins	544-3143-002
P2 thru P5	NOT USED	
P6	POWER CONNECTOR, 11 female socket contacts, Amphenol 78-S11T or Cinch 13786 (see W1)	372-1759-00
R1, R24	RESISTOR, FIXED, COMPOSITION: 3.3 megohms ±10%, 1/2 w	745-1499-00
R2, R16, R30 R53, R69	RESISTOR, FIXED, COMPOSITION: 47K ohms ±10%; 1/2 w	745-1422-00
R3, R5, R6, R9, R10, R14, R18, R22, R38, R45, R49	RESISTOR, FIXED, COMPOSITION: 1000 ohms ±10%; 1/2 w	745-1352-00
R4, R23, R35, R37, R48	RESISTOR, FIXED, COMPOSITION: 220K ohms ±10%; 1/2 w	745-1450-00
R7	RESISTOR, FIXED, COMPOSITION: 68K ohms ±10%; 1/2 w	745-1429-00
R8, R12, R21	RESISTOR, FIXED, COMPOSITION: 68 ohms ±10%; 1/2 w	745-1303-00
R11, R19, R28, R34, R39, R43, R44, R60, R64	RESISTOR, FIXED, COMPOSITION: 100K ohms ±10%; 1/2 w	745-1436-00
R13	RESISTOR, VARIABLE, COMPOSITION: 250 ohms ±30%; 0.2 w	376-4602-00
R15	RESISTOR, FIXED, COMPOSITION: 15K ohms ±10%; 1 w	745-3401-00
R17, R27	RESISTOR, FIXED, COMPOSITION: 100 ohms ±10%; 1/2 w	745-1310-00
R25, R67	RESISTOR, FIXED, COMPOSITION: 1200 ohms, ±10%; 1/2 w	745-1356-00
R26	RESISTOR, FIXED, COMPOSITION: 3300 ohms ±10%; 1/2 w	745-1373-00
R29	RESISTOR, FIXED, COMPOSITION: 6800 ohms ±10%; 1/2 w	745-1387-00
R31	RESISTOR, VARIABLE, COMPOSITION: 500K ohms ±30%; 1/4 w	376-7401-00
R32	RESISTOR, FIXED, COMPOSITION: 12K ±10%; 1/2 w	745-1398-00
R33	RESISTOR, FIXED, COMPOSITION: 330 ohms ±10%; 1/2 w	745-1331-00
R36, R46, R63, R65	RESISTOR, FIXED, COMPOSITION: 1.0 megohm ±10%; 1/2 w	745-1478-00
R40	RESISTOR, FIXED, COMPOSITION: 68K ohms ±10%; 1/2 w	745-1429-00
R41	PART OF P1	
R42	RESISTOR, FIXED, COMPOSITION: 680 ohms ±10%; 1/2 w	745-1345-00
R47	RESISTOR, FIXED, COMPOSITION: 1.5 megohms ±10%; 1/2 w	745-1485-00
R20, R50, R68	RESISTOR, FIXED, COMPOSITION: 4700 ohms ±10%; 1/2 w	745-1380-00
R51	RESISTOR, FIXED, COMPOSITION: 470 ohms ±10%; 2 w	745-5638-00
R52	RESISTOR, FIXED, COMPOSITION: 3900 ohms ±10%; 2 w	745-5677-00
R54	RESISTOR, FIXED, COMPOSITION: 22K ±10%; 1/2 w	745-1408-00
R55, R58	RESISTOR, FIXED, COMPOSITION: 12K ohms ±10%; 1/2 w	745-1398-00
R56	RESISTOR, VARIABLE, COMPOSITION: 10K ohms ±30%; 1/4 w	376-7402-00
R57	RESISTOR, VARIABLE, COMPOSITION: 1000 ohms ±30%, 0.2 w	376-4601-00
R59	RESISTOR, FIXED, COMPOSITION: 1000 ohms ±10%; 2 w	745-5652-00
R61, R66	RESISTOR, FIXED, COMPOSITION: 470 ohms ±10%; 1/2 w	745-1338-00
R62	RESISTOR, FIXED, COMPOSITION: 10K ±10%; 2 w	745-5694-00
S1	SWITCH, ROTARY: 1 circuit, 14 position, 1 section, 1 moving, 16 fixed contacts	259-0981-00
S2, S3, S4	SWITCH SECTION, ROTARY: 1 circuit, 14 position; 1 moving 10 fixed contacts	269-2027-00
S5	SWITCH SECTION, ROTARY: 1 section, 4 positions, 3 circuit; 12 fixed, 3 moving contacts	259-0949-00
S6	SWITCH SECTION, ROTARY: 2 circuit, 12 position; 2 moving, 11 fixed contacts	269-1999-00
S7	SWITCH SECTION, ROTARY: 2 circuit, 12 position; 2 moving, 11 fixed contacts	269-1998-00
S8	SWITCH SECTION, ROTARY: 2 circuit, 12 position; 2 moving, 10 fixed contacts	269-2025-00
S9	SWITCH SECTION, ROTARY: 3 circuit, 12 position; 3 moving, 12 fixed contacts	269-2024-00
S11	SWITCH SECTION, ROTARY: 1 circuit, 4 position, 30° detent	259-1129-00
T1	TRANSFORMER, I-F: 2.945 to 3.165 kc included with L4 as a set	278-1721-00
T2	TRANSFORMER, I-F: 455 kc	278-0281-00
T3	TRANSFORMER, AUDIO FREQUENCY: pri 2500 ohms; sec 500 ohms and 4 ohms	667-0302-00
T4	TRANSFORMER, POWER: pri 115 v, 50/60 cps, sec 1 overall 220 v CT; sec 2, 6.3 v	662-0301-00
T5	TRANSFORMER, R-F: 3.4 to 30 mc; Collins	543-8120-002
T6	TRANSFORMER, R-F: 6.5 to 33 mc; Collins	543-8122-002
T7	TUNING UNIT, R-F: 440 to 470 kc freq range	278-0278-00
T8	TUNING UNIT, R-F: same as T7	278-0278-00
V1, V9	ELECTRON TUBE: type 6DC6	255-0226-00
V2, V3, V6	ELECTRON TUBE: type 6U8A	255-0328-00
V4, V5	ELECTRON TUBE: type 6BA6	255-0185-00
V7	ELECTRON TUBE: type 6AT6	255-0190-00
V8	ELECTRON TUBE: type 6BF5	255-0330-00
W1	POWER CABLE ASSEMBLY: 3 conductor #18 AWG, a-c plug, and power connector	544-3121-00
Y1 thru Y12	CRYSTALS:	
	CRYSTAL FREQUENCY FOR OPERATING FREQUENCY	
Y1	6.555 mc 3.4-3.6 mc	290-9009-00
Y2	6.755 mc 3.6-3.8 mc	290-9010-00
Y3	6.955 mc 3.8-4.0 mc	290-9011-00
Y4	10.155 mc 7.0-7.2 mc	290-9027-00
Y5	10.355 mc 7.2-7.4 mc	290-9028-00
Y6	8.5775 mc 14.0-14.2 mc	290-9062-00
Y7	8.6775 mc 14.2-14.4 mc	290-9063-00
Y8	8.9775 mc 14.8-15.0 mc	290-9066-00
Y9	12.0775 mc 21.0-21.2 mc	290-9097-00
Y10	12.1775 mc 21.2-21.4 mc	290-9098-00
Y11	12.2775 mc 21.4-21.6 mc	290-9099-00
Y12	15.8275 mc 28.5-28.7 mc	290-8691-00
Y13	NOT FURNISHED	
Y14	NOT FURNISHED	
Y15	453.650 kc	290-8705-00
Y16	456.350 kc	290-8706-00
Y17	100.000 kc	289-1424-00
70K-2 Oscillator Consisting of following parts		522-1093-00
C301	Select per operational requirement	
	CAPACITOR, FIXED, CERAMIC: 20 uuf ±5%, 500 vdcw; Centralab no. DA933-002 (X)	913-0053-00
	CAPACITOR, FIXED, CERAMIC: 20 uuf ±5%, 500 vdcw; Centralab no. DA933-006 (X)	913-0054-00
	CAPACITOR, FIXED, CERAMIC: 20 uuf ±5%, 500 vdcw; Centralab no. DA933-007 (X)	913-0055-00
	CAPACITOR, FIXED, CERAMIC: 20 uuf ±5%, 500 vdcw; Centralab no. DA933-008	913-0056-00
	CAPACITOR, FIXED, CERAMIC: 20 uuf ±5%, 500 vdcw; Centralab no. DA934-017 (X)	913-0057-00
	CAPACITOR, FIXED, CERAMIC: 20 uuf ±5%, 500 vdcw; Centralab no. DA934-018 (X)	913-0058-00
	CAPACITOR, FIXED, CERAMIC: 20 uuf ±10%, 500 vdcw; Centralab no. DA934-023 (X)	913-0232-00
	CAPACITOR, FIXED, CERAMIC: 20 uuf ±10%, 500 vdcw; Centralab no. DA934-024 (X)	913-0233-00
	CAPACITOR, FIXED, CERAMIC: 20 uuf ±10%, 500 vdcw; Centralab no. DA934-025 (X)	913-0234-00
C302	CAPACITOR, FIXED, MICA: 1100 uuf ±2%, 500 vdcw; Electromotive type DM-20	912-1747-00
C303	CAPACITOR, FIXED, MICA: 3000 uuf ±10%, 500 vdcw; Electromotive type DM-20	912-1748-00

75S-1 Receiver

ITEM	DESCRIPTION	COLLINS PART NO.
C304	CAPACITOR, FIXED, MICA: 200 uuf ±2%, 500 vdcw; Electromotive no. VCM15E201G	912-0514-00
C305	CAPACITOR, FIXED, CERAMIC: 100 uuf ±2%, 500 vdcw; Centralab	913-0074-00
	CAPACITOR, FIXED, CERAMIC: 100 uuf ±2%, 500 vdcw; Centralab no. DA933-017 (X)	913-0246-00
C306	CAPACITOR, FIXED, CERAMIC: dual section, ea section 0.01 uf plus 60 minus 40%, 250 vdcw; Centralab type DA148	913-2096-00
C307	CAPACITOR, FIXED, CERAMIC: 0.02 uf plus 60 minus 40%, 250 vdcw; Centralab type DA148	913-2097-00
C308	CAPACITOR, VARIABLE, CERAMIC: 5.0 uuf min to 37.5 uuf max, 350 vdcw; Erie Resistor type 557	917-1073-00

ITEM	DESCRIPTION	COLLINS PART NO.
CR301	DIODE: germanium, type 1N34A; Sylvania Electric	353-0103-00
L304	COIL, RADIO FREQUENCY: single layer wound, magnet wire, 3.30 uh; Jeffers Electronics type 102	240-0695-00
R301, R303	RESISTOR, FIXED, COMPOSITION: 0.10 megohms ±10%, 1/2 w; MIL RC20GF104K	745-1436-00
R302	RESISTOR, FIXED, COMPOSITION: 82,000 ohms ±10%, 1/2 w; MIL RC20GF823K	745-1433-00
T301	TRANSFORMER, RADIO FREQUENCY: pri 380 uhy nom, 790 kc; sec 2.7 uhy nom, 2.6 mc; Comm. Coil	240-0665-00
V301	ELECTRON TUBE: 6AU6 type; G. E.	255-0202-00

GENERAL COVERAGE CRYSTALS AVAILABLE

CRYSTAL FREQUENCY (kc)	FOR OPERATING FREQUENCY (mc)	PART NUMBER	CRYSTAL FREQUENCY (kc)	FOR OPERATING FREQUENCY (mc)	PART NUMBER	CRYSTAL FREQUENCY (kc)	FOR OPERATING FREQUENCY (mc)	PART NUMBER
6555.000	3.4-3.6	290-9009-00	8277.500	13.4-13.6	290-9059-00	12477.500	21.8-22.0	290-9101-00
6755.000	3.6-3.8	290-9010-00	8377.500	13.6-13.8	290-9060-00	12577.500	22.0-22.2	290-9102-00
6955.000	3.8-4.0	290-9011-00	8477.500	13.8-14.0	290-9061-00	12677.500	22.2-22.4	290-9103-00
7155.000	4.0-4.2	290-9012-00	8577.500	14.0-14.2	290-9062-00	12777.500	22.4-22.6	290-9104-00
7355.000	4.2-4.4	290-9013-00	8677.500	14.2-14.4	290-9063-00	12877.500	22.6-22.8	290-9105-00
7555.000	4.4-4.6	290-9014-00	8777.500	14.4-14.6	290-9064-00	12977.500	22.8-23.0	290-9106-00
7755.000	4.6-4.8	290-9015-00	8877.500	14.6-14.8	290-9065-00	13077.500	23.0-23.2	290-9107-00
7955.000	4.8-5.0	290-9016-00	8977.500	14.8-15.0	290-9066-00	13177.500	23.2-23.4	290-9108-00
9755.000	6.6-6.8	290-9025-00	9077.500	15.0-15.2	290-9067-00	13277.500	23.4-23.6	290-9109-00
9955.000	6.8-7.0	290-9026-00	9177.500	15.2-15.4	290-9068-00	13377.500	23.6-23.8	290-9110-00
10155.000	7.0-7.2	290-9027-00	9277.500	15.4-15.6	290-9069-00	13477.500	23.8-24.0	290-9111-00
10355.000	7.2-7.4	290-9028-00	9377.500	15.6-15.8	290-9070-00	13577.500	24.0-24.2	290-9112-00
10555.000	7.4-7.6	290-9029-00	9477.500	15.8-16.0	290-9071-00	13677.500	24.2-24.4	290-9113-00
10755.000	7.6-7.8	290-9030-00	9577.500	16.0-16.2	290-9072-00	13777.500	24.4-24.6	290-9114-00
10955.000	7.8-8.0	290-9031-00	9677.500	16.2-16.4	290-9073-00	13877.500	24.6-24.8	290-9115-00
11155.000	8.0-8.2	290-9032-00	9777.500	16.4-16.6	290-9074-00	13977.500	24.8-25.0	290-9116-00
11355.000	8.2-8.4	290-9033-00	9877.500	16.6-16.8	290-9075-00	14077.500	25.0-25.2	290-9117-00
11555.000	8.4-8.6	290-9034-00	9977.500	16.8-17.0	290-9076-00	14177.500	25.2-25.4	290-9118-00
11755.000	8.6-8.8	290-9035-00	10077.500	17.0-17.2	290-9077-00	14277.500	25.4-25.6	290-9119-00
11955.000	8.8-9.0	290-9036-00	10177.500	17.2-17.4	290-9078-00	14377.500	25.6-25.8	290-9120-00
12155.000	9.0-9.2	290-9037-00	10277.500	17.4-17.6	290-9079-00	14477.500	25.8-26.0	290-9121-00
12355.000	9.2-9.4	290-9038-00	10377.500	17.6-17.8	290-9080-00	14577.500	26.0-26.2	290-9122-00
12555.000	9.4-9.6	290-9039-00	10477.500	17.8-18.0	290-9081-00	14677.500	26.2-26.4	290-9123-00
12755.000	9.6-9.8	290-9040-00	10577.500	18.0-18.2	290-9082-00	14777.500	26.4-26.6	290-9124-00
12955.000	9.8-10.0	290-9041-00	10677.500	18.2-18.4	290-9083-00	14877.500	26.6-26.8	290-9125-00
13155.000	10.0-10.2	290-9042-00	10777.500	18.4-18.6	290-9084-00	14977.500	26.8-27.0	290-9126-00
13355.000	10.2-10.4	290-9043-00	10877.500	18.6-18.8	290-9085-00	15077.500	27.0-27.2	290-9127-00
13555.000	10.4-10.6	290-9044-00	10977.500	18.8-19.0	290-9086-00	15177.500	27.2-27.4	290-9128-00
13755.000	10.6-10.8	290-9045-00	11077.500	19.0-19.2	290-9087-00	15277.500	27.4-27.6	290-9129-00
13955.000	10.8-11.0	290-9046-00	11177.500	19.2-19.4	290-9088-00	15377.500	27.6-27.8	290-9130-00
14155.000	11.0-11.2	290-9047-00	11277.500	19.4-19.6	290-9089-00	15477.500	27.8-28.0	290-9131-00
14355.000	11.2-11.4	290-9048-00	11377.500	19.6-19.8	290-9090-00	15527.500	27.9-28.1	290-9142-00
14555.000	11.4-11.6	290-9049-00	11477.500	19.8-20.0	290-9091-00	15577.500	28.0-28.2	290-9132-00
14755.000	11.6-11.8	290-9050-00	11577.500	20.0-20.2	290-9092-00	15627.500	28.1-28.3	290-9143-00
14955.000	11.8-12.0	290-9051-00	11677.500	20.2-20.4	290-9093-00	15677.500	28.2-28.4	290-9133-00
7577.500	12.0-12.2	290-9052-00	11777.500	20.4-20.6	290-9094-00	15727.500	28.3-28.5	290-9144-00
7677.500	12.2-12.4	290-9053-00	11877.500	20.6-20.8	290-9095-00	15777.500	28.4-28.6	290-9134-00
7777.500	12.4-12.6	290-9054-00	11977.500	20.8-21.0	290-9096-00	15877.500	28.6-28.8	290-9135-00
7877.500	12.6-12.8	290-9055-00	12077.500	21.0-21.2	290-9097-00	15927.500	28.7-28.9	290-9145-00
7977.500	12.8-13.0	290-9056-00	12177.500	21.2-21.4	290-9098-00	15977.500	28.8-29.0	290-9136-00
8077.500	13.0-13.2	290-9057-00	12277.500	21.4-21.6	290-9099-00	16027.500	28.9-29.1	290-9146-00
8177.500	13.2-13.4	290-9058-00	12377.500	21.6-21.8	290-9100-00	16077.500	29.0-29.2	290-9137-00
						16127.500	29.1-29.3	290-9147-00
						16177.500	29.2-29.4	290-9138-00
						16227.500	29.3-29.5	290-9148-00
						16277.500	29.4-29.6	290-9139-00
						16327.500	29.5-29.7	290-9149-00
						16377.500	29.6-29.8	290-9140-00
						16477.500	29.8-30.0	290-9141-00

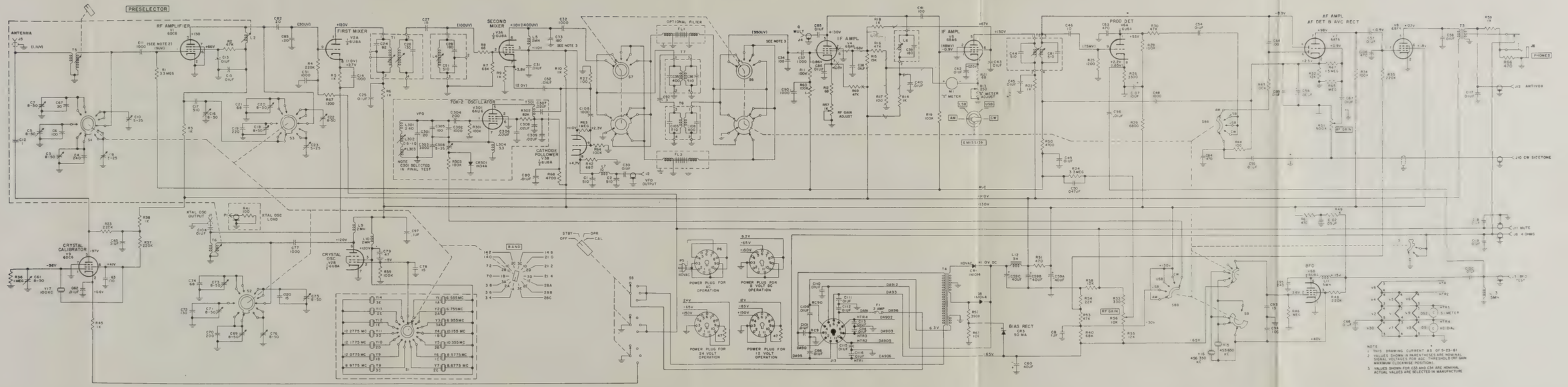

Figure 7-1. 75S-1 Receiver, Schematic Diagram

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